The Association Between Switching Hand Preference and the Declining Prevalence of Left-Handedness With Age

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ABSTRACT

Objectives. This study determined the prevalence of left-handedness and of switching hand preference among innately left-handed subjects.

Methods. Subjects of Swiss nationality (n = 1692), participating in a population-based survey in Geneva, Switzerland, completed a questionnaire on innate hand preference and current hand preference for writing.

Results. From 35 to 44 years of age to 65 to 74 years of age, the prevalence of innate left-handedness declined from 11.9% to 6.2% (trend $P = .007$). In these same age groups, the proportion of innately left-handed subjects who switched to the right hand for writing increased from 26.6% to 88.9% (trend $P = .0001$).

Conclusions. Across generations, we found an increase in the prevalence of switching hand preference among innately left-handed subjects. This phenomenon could be explained by social and parental pressure to use the right hand.(*Am J Public Health.* 1999;89: 1873–1875)

One of every 10 to 20 people in Western populations is left-handed. In all studies, the prevalence of left-handedness becomes progressively rarer in older age groups.[1–4] A shorter life expectancy for left-handed people due to congenital disease,[2,5] traumatic events,[6,7] or other diseases[8] could explain this trend. However, not all studies report a higher mortality among left-handed subjects,[3,9–11] and the association of left-handedness with specific diseases is controversial.[12,13]

If left-handed people do not die earlier than their right-handed peers, they may progressively switch to using the right hand because of societal pressure. Western societies promote use of the right hand either by imposing it during childhood or simply by designing most instruments (including cars and tools) for right-handed people.[14] Consequently, cross-sectional studies could simultaneously observe 2 inverse trends across generations—an increase in the prevalence of switching hand preference among innately left-handed people and a decrease in the overall prevalence of reported left-handedness.

The present study, using information on innate and adult hand preference, assessed whether the decline of left-handedness with age is correlated with an increased switch of hand preference among innately left-handed people.

Methods

The Bus Santé 2000 project is an ongoing, community-based survey of cardiovascular risk factors conducted every year since 1993 in Geneva, Switzerland. Its methodology has been described in detail elsewhere.[15] Data reported here are for 1692 Swiss men and women randomly selected among the noninstitutionalized Swiss population aged 35 to 74 years from 1993 to 1996. The overall participation rate was 65%.

Participants completed a self-administered standardized questionnaire about lifestyle risk factors. Two questions, introduced in 1993 for men and in 1994 for women, assessed hand preference: (1) "What was your innate hand preference?" and (2) "Which hand do you use for writing?" The 3 possible answers were "right hand," "left hand," and "both." Education and occupation were categorized into 3 levels: low, medium, and high. Type of residence was urban or rural.

The influence of sex, occupation, education, and type of residence on the age-related trends in the prevalence of innate left-handedness or of hand switch was assessed with logistic regression models.

Results

From 35 to 44 years to 65 to 74 years of age, the prevalence of innate left-handedness declined from 11.9% to 6.2% (trend $P = .007$) in men and women (Figure 1). In these same age groups, the proportion of innately left-handed subjects who switched to the right hand for writing increased from 26.6% to 88.9% (trend $P = .0001$) (Figure 2). Trends were similar for both sexes, but for each age group the incidence of hand switch and the prevalence of innate left-handedness were higher in men than in women (results not shown).

Neither education, occupation, or residence was associated with left-handedness or with hand switch (results not shown). There were only 2 right-handed subjects who reported having switched to left-handed writing.

Discussion

Hand preference is a characteristic that develops throughout life,[16] although it is mainly established during the first years of life.[17] Societal pressure directly results in switching hand preference among innately left-handed people and may also decrease the overall prevalence of reported innate left-handedness. Left-handed subjects are less certain about their hand preference than are

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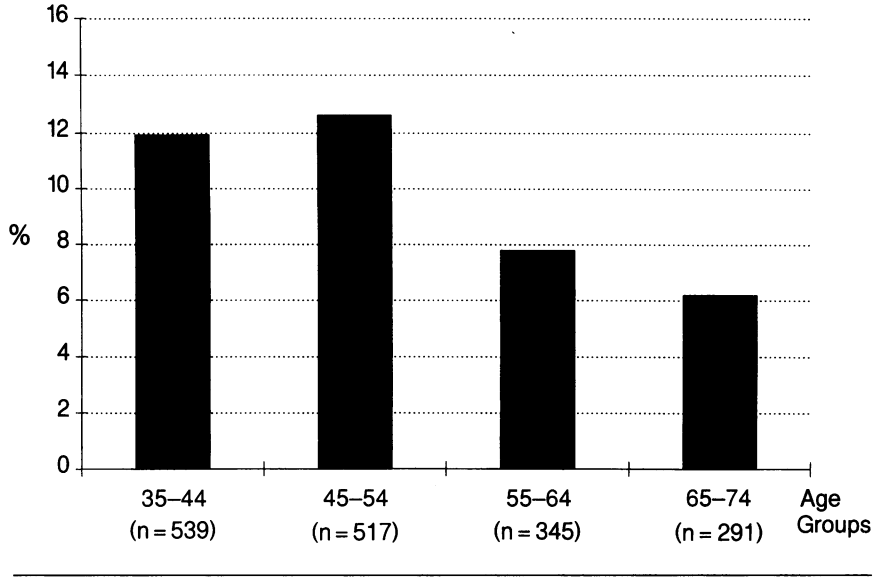

FIGURE 1—Prevalence of innate preference for using the left hand in subjects of Swiss origin, by age group: Geneva, Switzerland, 1993–1996.

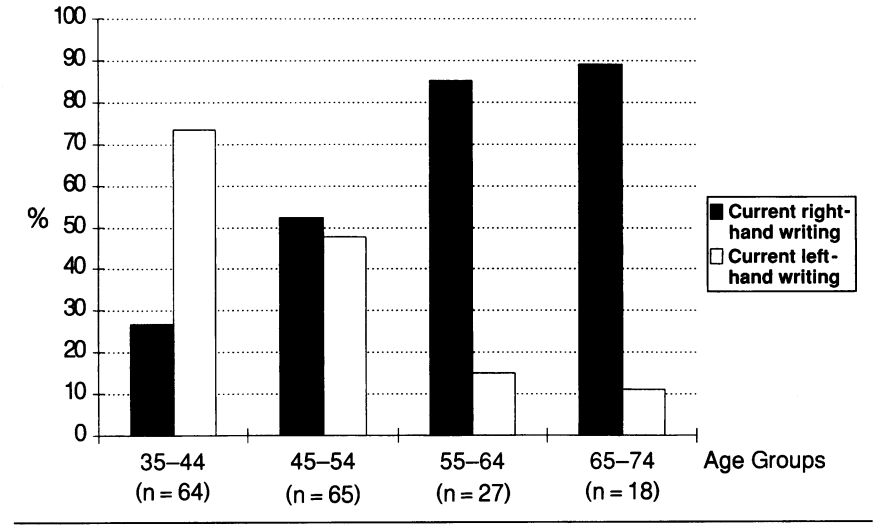

FIGURE 2—Proportion of current preference for writing with the right hand vs the left hand among innate left-handed subjects of Swiss origin: Geneva, Switzerland, 1993–1996.

right-handed subjects.[18] Some left-handed people may have switched so early to right-hand habits through parental and societal pressure that they do not recall their innate handedness. At the same time, our results cannot rule out the possibility that higher mortality among left-handed subjects explains the decline of innate left-handedness with age.[2]

Switching hand preference was stronger among older subjects, which is consistent with the hypothesis that some relaxation in social pressure allowed subjects born after World War II to avoid changing their handedness.[19]

Two studies that assessed changes in the prevalence of left-handedness over time also indicated cultural variations. Brackenridge[20] found an increase in left-handedness over 90 years in Australia and New Zealand, while Coren[21] reported no differences in the prevalence of left-handedness in 2 surveys of the same population in Canada taken more than 10 years apart (1975–1976 and 1987–1990).

The availability of information on hand preference during childhood and adulthood allowed us to determine for the first time the prevalence of hand switch among left-handed people. Our question on innate hand preference may, however, have been limited because it did not refer to any specific task. Some authors include questions on the preferred hand for using scissors or eating utensils or for throwing a ball. On the other hand, global questions about spontaneous or innate hand preference are often answered in reference to handwriting.[2] If subjects who wrote with the right hand but were left-handed for all other tasks responded that their innate preference was left-handedness, we would overestimate the incidence of switching hand preference. However, this overestimation cannot account for the strong increase in current writing with the right hand that we found among innately left-handed subjects.

In conclusion, we found that switching hand habits was an important phenomenon among left-handed subjects. There was a simultaneous decrease in the prevalence of innate left-handedness with age. Higher mortality among innately left-handed people remains a plausible explanation for this phenomenon, but societal pressure on left-handed subjects also plays a role. □

Contributors

B. Galobardes planned the study, analyzed the data, and wrote the paper. M. S. Bernstein coordinated and supervised the data collection and contributed to writing the paper. A. Morabia planned the study, supervised data analysis, and wrote the paper.

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Cigarette Smoking Among Gay and Bisexual Men

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ABSTRACT

Objectives. This study measured the prevalence of cigarette smoking among gay men and identified associations with smoking.

Methods. Household-based (n = 696) and bar-based (n = 1897) sampling procedures yielded 2593 gay male participants from Portland, Ore, and Tucson, Ariz, in the spring of 1992.

Results. Forty-eight percent of the combined sample reported current smoking, a rate far above prevalence estimates for men in Arizona ($z = 14.11$, $P < .001$) or Oregon ($z = 24.24$, $P < .001$). Significant associations with smoking included heavy drinking, frequent gay bar attendance, greater AIDS-related losses, HIV seropositivity, lower health rating than members of same age cohort, lower educational attainment, and lower income.

Conclusions. Rates of cigarette smoking are very high among gay men. Tobacco prevention and cessation campaigns should be designed to reach the gay male community. (*Am J Public Health.* 1999;89:1875–1878)

Data on patterns of tobacco use among gay and bisexual men are limited. Large-scale epidemiologic studies of tobacco use among Americans rarely measure sexual orientation, while large-scale studies of gay men infrequently measure tobacco use. Existing evidence suggests that gay men are more likely to smoke than the general adult male population,[1–6] with prevalence rates of smoking clustering around 40%.

If gay men smoke more than men in general, they may constitute a population for whom American tobacco control efforts have had limited benefit. Furthermore, smoking rates among gay men may increase as major tobacco companies begin marketing campaigns that target gay men.[7–9] The lack of representative household-based data on smoking among gay men has compromised advocacy efforts for prevention and treatment programs aimed specifically at gay men. Finally, the ability to design effective prevention and treatment programs would be enhanced by a greater understanding of the psychosocial correlates of smoking among gay men.

This report describes the prevalence and associations of smoking among 2 large-scale samples of gay men, using both household-based and gay bar sampling strategies. Prevalence estimates of smoking among gay men are directly compared with those of general-population samples of adult men, and the independent psychosocial associations of smoking among gay men are identified. The report ends with a discussion of the key research questions that must be answered if rates of smoking are to be lowered among American gay men.

Methods

Sampling

Two separate methods were used to sample gay men in Portland, Ore, and Tucson, Ariz, during the spring of 1992. Briefly, the first method used a randomized time period method to recruit male patrons of gay bars (n = 1897). The second method used a random sample of listed telephone numbers for households in Portland and Tucson to screen for resident gay/bisexual men (n = 696). Taken together, the use of the bar and list-frame telephone sampling methods yielded a sample of 2593 self-identified gay or bisexual men from both cities. (For further detail on the sampling design, see reference 10.)

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